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IS 4218-1 (2001): ISO General Purpose Metric Screw Threads, Part 1: Basic and Design Profiles [PGD 20: Engineering Standards]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

आई० एस० ओ० सामान्य प्रयोजन की मीटरी पेंच चूडियाँ

भाग 1 आधारभूत प्रोफाइल

(दूसरा पुनरीक्षण)

Indian Standard

ISO GENERAL PURPOSE METRIC SCREW THREADS

PART 1 BASIC PROFILE

(*Second Revision*)

ICS 21.040.01

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Price Group 2

NATIONAL FOREWORD

This Indian Standard (Part 1) (Second Revision) which is identical with ISO 68-1 : 1998 'ISO general purpose screw threads — Basic profile — Part 1: Metric screw threads' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of Engineering Standards Sectional Committee and approval of the Basic and Production Engineering Division Council.

This standard was originally issued in 1967 and subsequently revised in 1976. The first revision was based on ISO 68 and DIN 13 Sheet 19. This second revision has been issued by adopting ISO 68-1 : 1998.

The Committee, responsible for preparation of Indian Standards on Screw Threads, decided to revise all the six parts of IS 4218 in the following manner:

- a) The revised IS 4218 to be published in four parts, that is Parts 1 to 4 adopting ISO 68-1 : 1998, ISO 261 : 1998, ISO 724 : 1993 and ISO 262 : 1998 respectively covering the various requirements of ISO general purpose metric screw threads except tolerances;
- b) For tolerances on ISO general purpose metric screw threads a new standard that is IS 14962 to be published in five parts, that is Parts 1 to 5 by adopting ISO 965 (Part 1) : 1998, ISO 965 (Part 2) : 1998, ISO 965 (Part 3) : 1998, ISO 965 (Part 4) : 1998 and ISO 965 (Part 5) : 1998 respectively; and
- c) After the publication of above standards, IS 4218 (Part 5) : 1979 and IS 4218 (Part 6) : 1978 stand withdrawn.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. In the adopted standard, certain conventions are not identical to those used in Indian Standards. Attention is especially drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard. they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a full point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 965-1 : 1998	IS 14962 (Part 1) : 2001 ISO general purpose metric screw threads — Tolerances: Part 1 Principles and basic data	Identical
ISO 5408 : 1983	IS 10587 : 1983 Terminology for screw threads	Modified

This standard (Part 1) covers the 'Basic profile of ISO general purpose metric screw threads'. The other three parts of standard are listed below:

<i>IS No.</i>	<i>Title</i>
IS 4218 (Part 2) : 2001/ ISO 261 : 1998	ISO general purpose metric screw threads: Part 2 General plan (second revision)

(Continued on third cover)

Indian Standard
ISO GENERAL PURPOSE METRIC SCREW THREADS
PART 1 BASIC PROFILE
(Second Revision)

1 Scope

This part of ISO 68 specifies the basic profile for ISO general purpose metric screw threads (M).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 68. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this part of ISO 68 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 965-1:1998, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*.

ISO 5408:1983, *Cylindrical screw threads — Vocabulary*.

3 Definitions

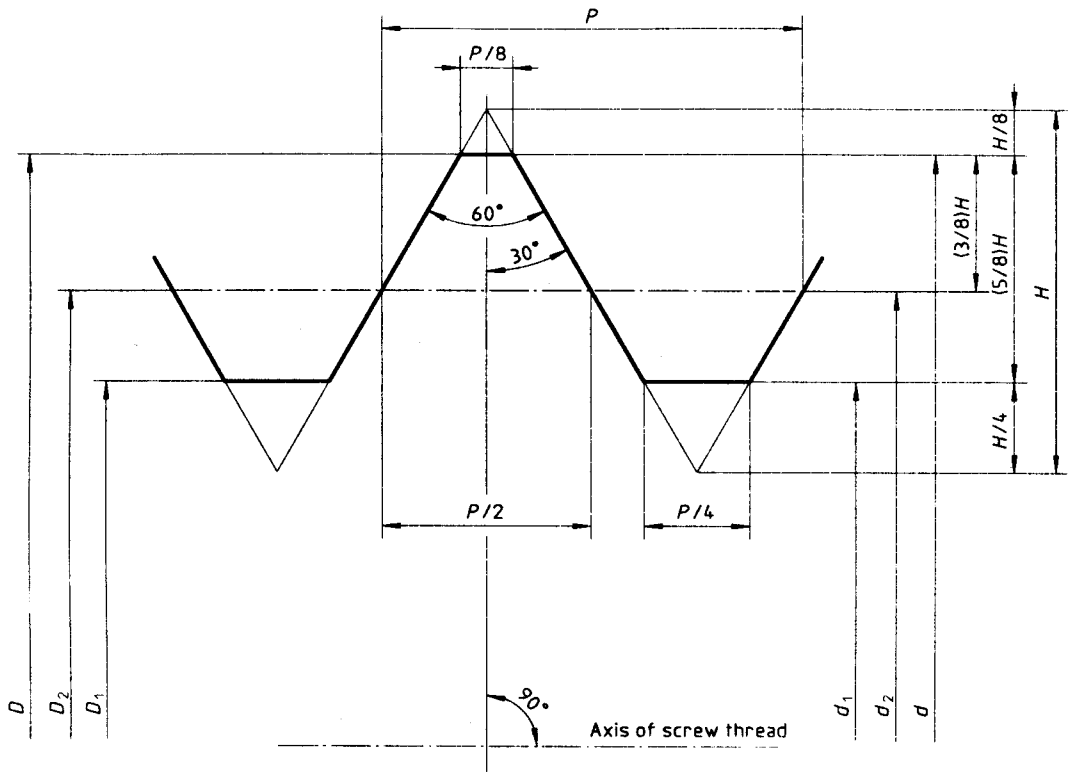
For the purpose of this part of ISO 68 the definitions given in ISO 5408 apply. Only the term "basic profile" which might be usefully restated is defined below.

3.1

basic profile

The theoretical profile of a screw thread in an axial plane defined by theoretical dimensions and angles common to internal and external threads

NOTE The basic profile is shown as a thick line in figure 1.



- where
- D is the basic major diameter of internal thread (nominal diameter)
 - d is the basic major diameter of external thread (nominal diameter)
 - D_2 is the basic pitch diameter of internal thread
 - d_2 is the basic pitch diameter of external thread
 - D_1 is the basic minor diameter of internal thread
 - d_1 is the basic minor diameter of external thread
 - H is the height of fundamental triangle
 - P is the pitch

Figure 1

4 Dimensions

The fundamental deviations and tolerances specified in ISO 965-1 are applied to the dimensions of the basic profile shown in figure 1 and derived from table 1.

$$H = \frac{\sqrt{3}}{2} P = 0,866\,025\,404\,P$$

$$\frac{5}{8} H = 0,541\,265\,877\,P$$

$$\frac{3}{8} H = 0,324\,759\,526\,P$$

$$\frac{H}{4} = 0,216\,506\,351\,P$$

$$\frac{H}{8} = 0,108\,253\,175\,P$$

Table 1

Dimensions in millimetres

Pitch P	H	$\frac{5}{8} H$	$\frac{3}{8} H$	$\frac{H}{4}$	$\frac{H}{8}$
0,2	0,173 205	0,108 253	0,064 952	0,043 301	0,021 651
0,25	0,216 506	0,135 316	0,081 190	0,054 127	0,027 063
0,3	0,259 808	0,162 380	0,097 428	0,064 952	0,032 476
0,35	0,303 109	0,189 443	0,113 666	0,075 777	0,037 889
0,4	0,346 410	0,216 506	0,129 904	0,086 603	0,043 301
0,45	0,389 711	0,243 570	0,146 142	0,097 428	0,048 714
0,5	0,433 013	0,270 633	0,162 380	0,108 253	0,054 127
0,6	0,519 615	0,324 760	0,194 856	0,129 904	0,064 952
0,7	0,606 218	0,378 886	0,227 332	0,151 554	0,075 777
0,75	0,649 519	0,405 949	0,243 570	0,162 380	0,081 190
0,8	0,692 820	0,433 013	0,259 808	0,173 205	0,086 603
1	0,866 025	0,541 266	0,324 760	0,216 506	0,108 253
1,25	1,082 532	0,676 582	0,405 949	0,270 633	0,135 316
1,5	1,299 038	0,811 899	0,487 139	0,324 760	0,162 380
1,75	1,515 544	0,947 215	0,568 329	0,378 886	0,189 443
2	1,732 051	1,082 532	0,649 519	0,433 013	0,216 506
2,5	2,165 063	1,353 165	0,811 899	0,541 266	0,270 633
3	2,598 076	1,623 798	0,974 279	0,649 519	0,324 760
3,5	3,031 089	1,894 431	1,136 658	0,757 772	0,378 886
4	3,464 102	2,165 063	1,299 038	0,866 025	0,433 013
4,5	3,897 114	2,435 696	1,461 418	0,974 279	0,487 139
5	4,330 127	2,706 329	1,623 798	1,082 532	0,541 266
5,5	4,763 140	2,976 962	1,786 177	1,190 785	0,595 392
6	5,196 152	3,247 595	1,948 557	1,299 038	0,649 519
8	6,928 203	4,330 127	2,598 076	1,732 051	0,866 025

(Continued from second cover)

<i>IS No.</i>	<i>Title</i>
IS 4218 (Part 3) : 1999/ ISO 724 : 1993	ISO general purpose metric screw threads: Part 3 Basic dimensions (<i>second revision</i>)
IS 4218 (Part 4) : 2001/ ISO 262 : 1998	ISO general purpose metric screw threads: Part 4 Selected sizes for screws, bolts and nuts (<i>second revision</i>)

Indian Standards published on tolerances for ISO general purpose metric screw threads are listed below:

<i>IS No.</i>	<i>Title</i>
IS 14962 (Part 1) : 2001/ ISO 965-1 : 1998	ISO general purpose metric screw threads — Tolerances: Part 1 Principles and basic data
IS 14962 (Part 2) : 2001/ ISO 965-2 : 1998	ISO general purpose metric screw threads — Tolerances: Part 2 Limits of sizes for general purposes external and internal screw threads — Medium quality
IS 14962 (Part 3) : 2001/ ISO 965-3 : 1998	ISO general purpose metric screw threads — Tolerances: Part 3 Deviations for constructional screw threads
IS 14962 (Part 4) : 2001/ ISO 965-4 : 1998	ISO general purpose metric screw threads — Tolerances: Part 4 Limits of sizes for hot-dip galvanized external screw threads to mate with internal screw threads tapped with tolerance position H or G after galvanizing
IS 14962 (Part 5) : 2001/ ISO 965-5 : 1998	ISO general purpose metric screw threads — Tolerances: Part 5 Limits of sizes for internal screw threads to mate with hot-dip galvanized external screw threads with maximum size of tolerance position h before galvanizing

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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